## Abstract Submitted for the DNP16 Meeting of The American Physical Society

Progress towards the Advanced Cryogenic Gas Stopper at NSCL<sup>1</sup> KASEY LUND, The National Superconducting Cyclotron Laboratory, GEORG BOLLEN, ANTONIO VILLIARI, The Facility for Rare Isotope Beams, DON LAWTON, DAVE MORRISSEY, JACK OTTERSON, RYAN RINGLE, STEFAN SCHWARZ, CHANDANA SUMITHRARACHCHI, JOHN YURKON, The National Superconducting Cyclotron Laboratory, THE ADVANCED CRYOGENIC GAS STOPPER DESIGN TEAM — Beam stopping is the key to performing experiments with low-energy beams of rare isotopes produced by projectile fragmentation. Linear gas stoppers filled with helium have become reliable tools to accomplish this task. Further developments are underway to maximize efficiency and beam rate capability in order to increase scientific reach. Improvements include increasing extraction efficiency, lowering decay losses due to slow transport time, reducing molecular combination of the isotope of interest with background impurity gases, and minimizing space charge effects. The ACGS under construction at NSCL is designed to increase performance by overcoming some of the more common issues. The use of a 4-phase RF wire carpet to generate an electrical traveling wave speeds up the ion transport times. Cryogenic cooling of the helium gas chamber reduces molecular ion information. A geometry that puts the RF carpet in the mid-plane of the gas stopper alleviates space charge effects. Prototype testing of important ACGS components has been completed, specifically ion transport tests of the newly designed RF wire carpets. Transport efficiencies up to 95% were demonstrated as well as transport speeds up to 100 m/s.

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